Are We Assessing Our Students Too Continuously?

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Introduction

As NUS students go through their undergraduate years, it sometimes seems as if they spend their time rushing through one assignment after another. It was this observation that prompted us to seek some quantitative feedback on Continuous Assessment (CA) from the students we teach, in this case Life Science students. Two classes, LSM4261 “Marine Biology” (56 students) and LSM3254 “Ecology of Aquatic Environments” (65 students), were surveyed in Semester 1 AY2010/2011 using hardcopy questionnaires that were returned anonymously. The students were given dedicated time to independently complete the questionnaires in class. The classes were non-overlapping, i.e. no student took both modules simultaneously. The total number of respondents was 105 (overall response rate of 87%), of which 85.7% were Life Sciences Majors specialising in Biology (or Environmental Biology, as the specialisation has been recently renamed). In order to confirm some data collected from the surveys and to gather other kinds of information which may have been missed, we also interviewed selected groups of students after the surveys were conducted.

Workload from CAs

Previous studies have demonstrated that high CA workloads per se do not equal high levels of stress as perceived by students, as there are other contributing factors (Kember & Leung, 2006). For instance, there exists a positive relationship between students’ evaluations of teaching (SETs) and “good workload” (that which is perceived to be valuable for education) and a negative relationship with “bad workload” (everything else that is not classified as “good”) (Marsh, 2001). Nevertheless, Zajacova et al. (2005, pp. 687) found that “writing term papers” and “having more tests in the same week” were ranked by students as the top two most stressful university tasks out of a list of 27.

We hypothesised that more CAs would take up more of the students’ time (per x% of the overall mark) and therefore be unpopular. For example, a single CA worth 50% of the overall mark may take 10 hours, or 12 minutes per 1%, whereas five separate CAs worth 10% each might take 3 hours per assignment, or 18 minutes per 1%. This premise was based on our observations while teaching that NUS students often expend a lot of time and effort (be it in terms of preparatory work, actual project work, studying for tests, etc.) to plough through their various CAs, regardless of their weightage. We asked our classes whether they felt this was the case. In the survey, students were asked the following question:

• “In general, I take more time in total to complete many [4 to 6] small CAs than a few [1 to 3] larger CAs.” What is your response to this statement?

Their mean response was 3.67 (standard deviation=0.95) on a 5-point Likert scale, indicating they agreed with this statement, but not very strongly (with 3 being “neutral” and 4 being “agree slightly”).
Numbers of CAs

We also tried to determine how many CAs students would ideally like by asking the following questions in the survey:

- “Assuming that the CA component of a module is worth 60% of the module mark, what ‘spread’ of CAs would you prefer?”

Students could choose from five options for this question. Out of the 105 respondents, none wanted a single CA to carry all 60% of the marks. In fact, the great majority (>90%) preferred two, three or four CAs in a module—the number of CAs which are commonly given for modules in Environmental Biology (Figure 1). Hence, this preference may just reflect what the students are used to; but it may also be possible that they are hedging their bets. Subsequent interviews with class members suggest the latter as many said they did not want to place all their eggs in one basket, i.e. having the whole CA component of the module be dependent on the grades of just one CA.

When we asked what was the least and most number of CAs the students had been given in a single module in that semester, the results surprised us. The number of CAs ranged from 0 to 13! The high number was apparently due to small tests being given in every class. The mean number for the question “this semester, what is the greatest number of CAs you have in a single module?” was 4.3 while the mean for the question which asked for the least number of CAs was 1.8. The median of these two figures is 2.5; if we multiply this by 4 modules (the usual number read by students per semester) we get 10 CAs in a 13-week semester, or slightly less than one CA per week. This is perhaps not a huge number, but only if the CAs are well spread out. However, this is not usually the case since project report/presentation deadlines are often in the later part of the semester and mid-term quizzes are, well, in the middle of the term!

We also explored the relationship between the weightage of the CA assignment and how long students wanted to work on it. We hypothesised that students might want earlier hand-in dates than what they are often given, especially for CA assignments worth only 10 or 20% of the module’s CA component. Unsurprisingly, the more the CA is worth the more time students would want to complete it (Figure 2). However, it is still interesting to note from the survey results in Figure 2 how many students prefer earlier hand-in dates for smaller assignments. Submission deadlines are often clustered towards the end of the semester and even though students could get a head start and work on their assignments as soon as they are set, they are not always the best time managers (Misra & McKean, 2000)!

![Figure 1. Students surveyed (n=105) generally preferred to have two to four CAs.](image-url)
Assessing Student Learning

Weightage of CAs

Based on the survey results, we can see that CAs are popular among students; while some would like their assessment to be 100% CA, very few want it to be all based on the final exam (Figure 3). More than 70% of the survey’s respondents wanted a balance of 40% to 60% CA vis-à-vis the exam. Subsequent interviews with the students indicated that a heavier CA weightage than this would result in more stress during the semester, whereas greater exam weightage would lead to more exam stress. As many students have lots of practice at taking exams during their pre-university education, they do not feel especially intimidated by them. Some even professed during the interviews that they did not mind taking exams as they did not want to waste all those years building up their “exam smarts”.

Figure 2. The students surveyed (n=105) would like to hand in CA assignments that are only worth 10 or 20% early in the semester. Correspondingly, they want more time for more heavily weighted CA assignments.

Figure 3. The majority of the students surveyed (n=105) preferred an approximately equal balance between CA and exam.
Assessing Student Learning

Types of CAs

The students were also asked to rank eight types of CAs based on the question “What type of CA do you like best?” (see Table 1). The list provided was far from exhaustive. Furthermore, many of the students may not have encountered all of these types of assignments or tests. However, one or two points stand out. For instance, in-class quizzes are popular and individual presentations are not!

Based on the survey results, it seems that CAs can be grouped into two very broad categories: 1) those that are completed in class, such as scheduled quizzes with short questions or multiple choice questions (MCQs), as well as short reports handed in at the end of practicals; and 2) assignments where most of the work is done outside class time (independent study hours), such as take-home essays and group presentations. According to the survey, “MCQ/short question in class quiz (with prior warning)” was the most popular type of CA from the eight choices we provided. The students we spoke to said they felt that in-class quizzes took up less of their time and helped them to keep abreast with the material being taught. But they also felt that these quizzes did not test much beyond the memorising of facts. Even though the Open University in the UK suggests six to seven word CA essay (Chambers, 1992), “Essay” was the second most popular choice of the types of CAs we listed. Undoubtedly essays require more time for marking, but it seems they come under “good workload” (Marsh, 2001) and are popular because they facilitate deeper learning.

Unsurprisingly, the least popular CAs were those that are not worth as many marks (say 5%) but take up a lot of time. Multiple CAs that involve group work seem to be particularly taxing due to the logistics of getting individuals together to meet and to work on these tasks. Students also gave rather scathing feedback about “participatory” type of CAs, such as those based on attendance or on how often they contributed to a discussion forum. Nonetheless, students clearly find CAs important; they are a popular discussion topic and they will even make module choice decisions based on its CA load and type.

Conclusion

Based on the results of this survey, having two to four CAs in the form of scheduled in-class quizzes as well as take-home essays with a more or less even spread of 40 to 60% of the overall module mark appears to be the approach preferred by students. This seems to be a reasonable and workable balance. Staggering submission dates would also help students manage their time (and make marking easier)!

### Table 1. Eight types of CA ranked in order of what students surveyed “liked best”.

<table>
<thead>
<tr>
<th>Rank</th>
<th>CA type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MCQ/short question in class quiz (with prior warning)</td>
</tr>
<tr>
<td>2</td>
<td>Essay</td>
</tr>
<tr>
<td>3</td>
<td>Poster (technical or otherwise)</td>
</tr>
<tr>
<td>4</td>
<td>Group presentation</td>
</tr>
<tr>
<td>5</td>
<td>Critique/review of published work</td>
</tr>
<tr>
<td>6</td>
<td>Paper style (Intro’, Methods, Results, Discussion)</td>
</tr>
<tr>
<td>7</td>
<td>MCQ/short question in class quiz (without prior warning)</td>
</tr>
<tr>
<td>8</td>
<td>Individual presentation</td>
</tr>
</tbody>
</table>

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As noted by Kember (2004),

“It is possible to inspire students to work long hours towards high quality learning outcomes if attention is paid to teaching approaches, assessment and curriculum design in the broadest sense.” (pp. 165)

The key would seem to be to make CAs relevant and useful, so that students can see clearly how the assignments and tests are valuable to their education. Finally, it is worth noting that the students who participated in the survey were mostly Life Sciences majors. It would be interesting to conduct a similar survey with students of other disciplines to see whether there are differences in study culture, especially attitudes towards continuous assessment.

References

About the Authors

**Dr Peter Alan Todd** currently teaches LSM3254 “Ecology of Aquatic Environments” and LSM4261 “Marine Biology”. He believes that the best way to engage students is by making learning relevant and fun. To accomplish this, he uses the most recent and exciting research findings plus field-trips, in-class activities and small-group work.

Dr **Darren Yeo** currently teaches LSM3254 “Ecology of Aquatic Environments”, LSM4264 “Freshwater Biology”, LSM4266 “Topics in Aquatic Biodiversity”, and BL5230 “Invasion Biology”. Besides imparting specific knowledge in these areas, he also believes in the importance of inculcating in students a broader awareness and understanding of the subject. Much of this is done through the sharing/examination of real life experiences and especially local examples, which students can relate better to.